Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Insights – Solutions Review

1. Determine which vocabulary word from this unit best fits the definitions:

|  |  |
| --- | --- |
| Definition | Vocabulary Word |
| A solution that contains the maximum amount of dissolved solute |  |
| A way to express concentration when you have very small amounts of solute |  |
| A mixture that forms when substances dissolve and form a homogenous mixture |  |
| The substance that gets dissolved |  |
| A solution that contains a lot of solute |  |
| A solution that contains more dissolved solute that it should be able to |  |
| The substance that does the dissolving |  |
| A solution that could still dissolve more solute |  |
| A solution that does not contain a lot of solute |  |

1. When sugar is dissolved in water, what is the solvent? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is the solute? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. If you have a saturated solution and more solute gets added without changing the temperature or the amount of water, what will happen to the added solute?

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1. If you have an unsaturated solution and more solute gets added without changing the temperature or the amount of water, what will happen to the added solute?

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1. If you have a supersaturated solution and more solute gets added without changing the temperature or the amount of water, what will happen to the added solute?

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1. What does a solubility curve tell you? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Molarity and parts per million both tell you what? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Determine how much more solute needs to be added to the following solutions in order to make them saturated (HINT: use solubility curve):

|  |  |  |  |
| --- | --- | --- | --- |
| Amount of Solute already in solution | Amount of water | Temperature | How much more solute is needed (0 is a fine answer) |
| 120 g of KI | 100 g | 10 |  |
| 30 g NaCl | 100 g | 30 |  |
| 100 g KNO3 | 100 g | 60 |  |
| 60 g HCl | 100 g | 20 |  |
| 10g NH3 | 100 g | 90 |  |
| 40g NaNO3 | 100 g | 40 |  |

1. Using the solubility curve in your notes, determine if each of the following solutions are saturated, unsaturated, or supersaturated:

64 grams of KNO3 in 100 grams of water at 40oC\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

20 grams of KClO3 in 100 grams of water at 60oC \_\_\_\_\_\_\_\_\_\_\_\_\_\_

44 grams of NaCl in 100 grams of water at 90oC \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

160 grams NaNO3 in 100 grams of water at 50oC \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

21 grams of NH4Cl in 100 grams of water at 30oC \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Solve the following using the molarity formula:

What is the molarity of a solution containing 5 moles of solute and 3.5 liters of solution?

What is the molarity of a solution with 7 moles of solute and 4.8 liters of solution?

How many moles are in 7 liters of a 4.5 M solution?

How many moles are in 2 liters of 3.8 M solution?

If you have 4 liters of a 5.1 M solution, how many moles of solute are in it?

If you have 2.7 liters of 3.3 M solution, how many moles of solute are in it?

1. Solve the following using the parts per million formula

What is the concentration of a solution that contains 3 grams of solute and 4500

grams of solution?

What is the concentration of a solution that contains 0.9 grams of solute and

1050 grams of solution?

How many grams of solute are in 4500 grams of a 275 ppm solution?

1. Which of the following is most concentrated?

(a) 3.5 M NaCl (b) 2.1 M MgCl2

(c) 4.0 M FeCl3 (d) 0.2 M LiOH

1. When a salt is added to water what will it do to its boiling point? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ What will happen it its freezing point? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Why do we put salt on the roads in the winter? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What happens to salts when put into water that makes them interfere with the boiling point and freezing point? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. List 2 factors that will affect a substances ability to dissolve?

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1. When the temperature of a solution increases will it be able to dissolve more or less solid? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. When the temperature of a solution increases will it be able to dissolve more or less gas? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. If the pressure is changed as you are trying to dissolve a solid into a liquid will it affect it? If so how? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. If the pressure is increased as you are trying to dissolve a gas into a liquid, how will solubility be affected?

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1. If you have two solvents and add the same amount and type of solute, one solution you stir, the other you don’t, which one will dissolve faster?

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